

Atmos. Meas. Tech. Discuss., referee comment RC2
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Comment on amt-2020-513

Anonymous Referee #2

Referee comment on "Spectral calibration of the MethaneAIR instrument" by Carly Staebell et al., Atmos. Meas. Tech. Discuss., <https://doi.org/10.5194/amt-2020-513-RC2>, 2021

This is a nicely written paper that demonstrates the authors understand the primary issues associated with spectral calibration.

I have only a few comments.

Line 33:

Do the authors mean to say 200 km swath rather than what appears to be an area?
Please provide the single-dimension width.

Line 115:

Assuming that the camera images the sphere aperture (i.e. the sphere is not being used as an irradiance source), how can changing the diameter of the output port alter the sphere radiance (it will alter its irradiance)?

Line 117:

The description of 'calibration curves' lacks clarity. If you're going to talk about fits you need to describe exactly what you're fitting.

Line 186:

Please be more specific what you mean by 'percent of total detected light.' Is this the modeled SL for a simulated input scene? Is the percentage measured relative to the useful signal at each wavelength? What does 'total detected light' mean?

Line 262:

No mention is made of a radiometric correction to the ISRF. The iterative oversampling described in Section 5.1 yields empirical scale factors to 'stitch' the multiple pixels together. The scale factors remove differences in radiometric response between the adjacent spectral pixels. These differences include PRNU, which you want to remove, but also spectral response variations (because the pixels are at different wavelengths), which you do not want to remove. This latter variation needs to be included in the ISRFs before they can be used in any forward model calculation. I would expect any description of the 3D lookup table to mention how this variation is reintroduced. If the authors have concluded the effect is negligible then they should state so in the text.